BOOK REVIEWS

Systematic Study in the Elementory Schools. By LIDA BELLE EARHART, PH.D. New York: Teachers College, Columbia University, 1908. Pp. 90+9 Tables.

The century-old emphasis upon psychology as the guide in education is destined to yield sooner or later to some direction inherent in the current revival and reconstruction of logic. This study is a pioneer in its special field of analysis of teaching practice. It presents a more or less psychological account of the conditions and the emergence of logical dependence among pupils in the elementary school. At the same time it shows one source of the pedagogical waste of time and effort, and becomes a criticism of the logical aspects of textbooks in the hands of pupils. The first two chapters sketch inductive and deductive procedure; the next two present the textbook and the schoolroom processes of study; while the last two (with the nine tables), which are the most interesting part of the work, state the results obtained by several methods of observation as to what continues to be the typical school practice and what is possible with children from the fourth to the seventh grades. The experiment of training some of the pupils tested in systematic study in order to show its possibility in general stands in need of greater control before it can be expected to yield results that would be either more uniform or accepted as conclusive. The author happily recognizes the limitations in this study. But it is important to be shown anew the regrettable situation that teaching too frequently leaves pupils helpless, and to have the theory of study illuminated by facts more or less negative. The early doom of "soft pedagogy" is not heralded by the discovery that "teachers lack a clear conception of what proper study is" (p. 66). Reading this monograph should be helpful to every teacher; but the reader will find difficulty in following the text and the tables which are not most conveniently arranged for ease of reference.

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An Algebra for Secondary Schools. By E. R. HEDRICK, Professor of Mathematics in the University of Missouri. New York: American Book Co., 1908. Pp. x+421. $1.00.

The number of good scholars turning their hand to the preparation of secondary texts in mathematics is rapidly increasing. Something more than a dozen secondary texts in algebra and geometry have appeared from the press during the summer and autumn just passed, all of which purport to be recognizing the spirit of the new movements for the improvement of the teaching of mathematics in high schools and academies. The volume before us makes the common claim. The author alleges that while "it meets the entrance requirements of American colleges and universities generally, this book is written essentially for those for whom the high-school course is to be the last." A point of not a little importance has been gained of late years in

inducing men who prepare textbooks to take the point of view that the thing needed for high schools must be determined mainly by the requirements of students who are not going to colleges.

The distinctive features of this book are the metrical introductions to algebraic number; the early and extended use of graphs of numerous types; the care with which concepts are placed back of the operations applied to signed number; the condensation of certain topics, such as parentheses, into a much smaller compass than is usual; the great care given to work in the translation of English into algebra and algebra into English; the wide use of geometrical pictures to illuminate the algebra; the use of graphs in the teaching of simultaneous linear equations and quadratic equations rather than an appended chapter after the teaching service has been entirely performed, as is usually done by more timid teachers than Mr. Hedrick, and a rather full summary of the substance of the chapters. It should be mentioned that graphs are made to do valuable service in the presentation of logarithms. In the writer's opinion it is difficult to justify the treatment of logarithms as the last chapter of any school year. To make the subject of logarithms of value to a learner it is quite important that the development of the subject be followed up at once, by considerable application to calculations which impress the advantage gained by the use of logarithms.

There is also an appendix treating of detached coefficients, the remainder theorem as used in factoring, the factor theorem, choice and chance, permutations and combinations, factorials, Euclidean methods of H. C. F. and L. C. M., cube root and higher roots, limits, infinite series, imaginary and complex numbers, simultaneous quadratics graphically exhibited, and a summary of this rather heavy appendix. A valuable feature of the book is the tables of common weights and measures, including metric units with their English equivalents, also tables of geometrical mensuration formulas that come after the appendix, and then follows an index of a little over four pages.

As an example of the care with which the author presents some matters which are really difficult for the student but which the teacher usually passes over with no attention whatever, the following will serve: "A tin box is to be made from a square piece of tin by cutting out square corners and then folding up the flaps. Find the size of the piece of tin that must be used to make a box four inches high that must contain one hundred cubic inches volume. Let us first become familiar with the problem by trying several numbers. Suppose the original plate were eighteen inches square in the figure AB=BC=18 in., and we cut out the shaded corners each four inches square, etc."

After figuring the volume of the box from this trial it is found that it contains 400 cubic inches instead of 100 cubic inches, as required. Then the author suggests that it is easier to try the problem by calling the length of the required piece l and seeking to find l than to continue by this cut-and-try plan until the answer is happened upon. He then carefully carries through the solution of the problem on the unknown length l, getting the solution much after the customary fashion. Then he argues that the student must at the close of the solution "see which, if any, of the several possible answers are correct ones and if there may be answers that cannot possibly mean anything,

as seen above." In the reviewer's opinion, this is a skilful way of impressing the learner with the importance of the algebraic plan of introducing an unknown number to facilitate problem-solution. There are many good pedagogic things of the type just alluded to.

A general criticism against the book is that it is very highly condensed, the statements in many cases being very succinct, making the book pretty hard reading for the students of the first and second years of high-school work. There are some instances of too great punctiliousness for formal correctness of logic, and evidences of a little too much nervousness lest some college critics may not find the book sufficiently high toned mathematically. This, however, is a weakness that "leans to virtue's side." Perhaps President Hall would find this book less open to the objection of being padded with explanations to make the way plain for the easy-going student than are most textbooks used in the public schools today. It can hardly be said that Mr. Hedrick has shown in this excellent little book a desire to "whip two ounces of soap into two hogsheads of lather."

The publishers have done their part of the book well. Much good would come from replacing books of the prevailing type by such a book as Mr. Hedrick's. Every secondary teacher of algebra should study this book.

G. W. M.

The Eleanor Smith Music Course. By ELEANOR SMITH, Head of the Department of Music, School of Education, The University of Chicago. New York: American Book Co., 1908. Book I, pp. 112, $0.25; Book II, pp. 145, $0.30; Book III, pp. 192, $0.40; Book IV, pp. 255, $0.50.

It is with a sense of elation that one opens a book bearing the name of this author. Miss Smith has won for herself a place among those interested in the musical education of children which guarantees the value of what she offers. The material contained in this series is strikingly attractive both as to music and texts. Especially happy is its adaptation to the needs of our cosmopolitan schools through folk-songs of many lands, the texts of these being translations from the original. It is interesting to note that although carefully graded, the illustrative songs never depart from the high standard of excellence, even the exercises introducing and elaborating technical points having rich musical content. The first sixty-nine pages of Book I are devoted to short melodies for reading and writing, while rote-songs selected from German, French, Norwegian, Bohemian, Danish, as well as American sources complete a charming volume. Book II continues this sight-reading material and rote-songs while technical problems are introduced in well-arranged sequence. A preparation for two-part singing appears in the form of rounds and canons. In Book III, two-part songs are introduced. Studies by Taubert, Reinecke, and other well-known composers promise aesthetic pleasure while new problems are being solved. In Book IV an unusual group of songs for bass voices, by breezy texts and stirring melody, will satisfy the exacting taste of the larger boys. Taken together, the series is an important contribution to educative musical literature for children.

M. R. KERN